

NST

NANO SCRATCH TEST

Testing scratch resistance and adhesion failure

The Nano Scratch Test is a valuable technique to examine the scratch resistance, adhesion failure, and friction or wear of thin films.

This automated method utilizes an indenter with a rounded diamond tip that gently touches the film's surface while the sample is moved at a constant speed. The test force applied to the surface can either remain constant or increase linearly during the test. As a result, a scratch track is formed on the surface. Initially, the coating can withstand the small load, but as the force gradually increases, the material eventually fails. This failure leads to characteristic damage patterns, such as cracks, chipping of the coating, or substrate fatigue. The evaluation of the test results is conducted using an integrated light microscope.

The Nano Scratch Test is useful in the development of thin films that require high hardness and demands for wear or scratch resistance. It serves as an excellent method to investigate the adhesion of layers to the substrate or at the interface.

Additionally, the Nano Scratch Test can be employed for tribological tests, enabling the measurement of friction force and the coefficient of friction.



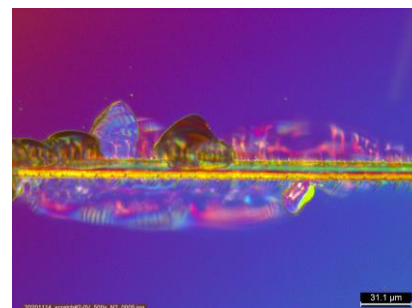
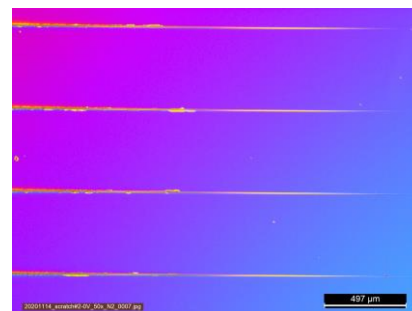
Test conditions

Load range 1-1000 mN
Diamond tip 2, 5 and 10 μm

Typically for film thicknesses
<1 μm

Standard

Based on ISO20502



Example for characteristic damage patterns

Contact:

Marcel Marxer
Sales Engineer
T +41 81 755 4978
marcel.marxer@rhysearch.ch

Werdenbergstrasse 4
9471 Buchs SG
www.rhysearch.ch